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THE IMPORTANCE OF LIGHTING IN PHARMACIES. THE PHYSIOLOGICAL AND HYGIENIC IMPORTANCE OF ROOM INSULATION AND NATURAL LIGHTING

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Ochilova Sevara Sanaqulovna
Assistant of the Termez branch of Tashkent State Medical University:
Tursunqulova Durdona O'tkirovna
Student of the Faculty of Pediatrics Termez Branch of Tashkent State Medical University Pharmacy Department:

Abstract

This article discusses the compliance of the level of illumination in pharmacies with hygienic and sanitary requirements, the impact of natural light (insolation) on the health of employees and consumers, as well as its role in maintaining the quality of medicines on a broad scientific basis. Pharmacies are institutions engaged in the provision of medicines, medical devices and pharmaceutical services to the population, and their internal microclimate, lighting quality, room insolation, air exchange and compliance with hygienic standards directly affect the effectiveness of the service provided. If sufficient natural light is associated with a decrease in microorganisms in the room, improved air quality, increased attention and working capacity of employees, then improperly organized lighting can lead to fatigue, eye strain, decreased concentration and reduced productivity. The article also extensively covers the bactericidal effect of sunlight, the hygienic importance of light in aseptic and sterile work processes in pharmacies, lighting standards, types of artificial lighting, the advantages of LED technologies, and processes such as photodegradation of medicinal substances. It is emphasized that the compliance of lighting in pharmacy rooms with hygienic requirements contributes to the reduction of pharmaceutical errors, patient safety, and increased quality of service. The combination of natural and artificial lighting is considered an important mechanism for creating a comfortable, safe, and sanitary working environment in a medical institution.

Keywords

Pharmacy hygiene, level of illumination, natural lighting, artificial lighting, insolation, lighting standards, microclimate, bactericidal effect, LED lighting, pharmaceutical safety, labor productivity, photodegradation, sanitary standards, aseptic conditions.

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Relevance of the topic: Compliance with hygienic standards of lighting in pharmacies is one of the main factors ensuring the quality of medical services and patient safety. Insufficient natural and artificial lighting systems lead to eye strain, decreased attention, increased errors, and reduced labor productivity in employees. In addition, the storage conditions of medicinal products and the preservation of their quality are directly related to lighting. The bactericidal effect of sunlight reduces microorganisms in the room, making the microclimate healthier. Therefore, the correct design of the lighting system of pharmacies is one of the most important hygienic requirements in the modern pharmacy system.

Purpose of the topic: The purpose of this article is to analyze the hygienic and physiological significance of lighting in pharmacies, to provide scientifically based information on the role of natural lighting (insolation), the requirements of artificial lighting systems, the effect of light on the safety of pharmaceutical processes, and its role in maintaining the quality of medicinal substances.

Main part: The level of illumination in pharmacies is one of the most important sections of hygienic standards, which directly affects not only the proper functioning of the pharmacist, but also the sanitary conditions inside the pharmacy and the quality of service provided to patients. A well-lit pharmacy encourages employees to work alertly, actively and accurately. In a room with insufficient lighting, the pharmacist quickly gets tired, eyes strain, attention weakens, and this creates conditions for various errors, including dangerous situations such as drug substitution and incorrect dosage. Natural lighting plays a key role in maintaining the hygienic cleanliness of the pharmacy building. This is because ultraviolet rays contained in the sunlight spectrum have a bactericidal effect and limit the growth of microbes, viruses and fungi in the air. Natural light also activates ventilation processes in the room, improves air circulation, and helps maintain normal humidity. When designing a pharmacy, it is prescribed based on hygienic standards that the windows should face south or southeast, and that there should be at least 2-3 hours of direct sunlight during the day. Insolation is also very important for human physiology. Pharmacy employees often work in closed rooms for a long time without stopping. If there is a lack of natural light, they experience complaints such as psycho-emotional stress, vegetative changes, headaches, nausea, sleep disorders, and depressive mood. Sunlight, in turn, helps to naturally produce serotonin and vitamin D, which improves mood, strengthens immunity, and increases work efficiency. The artificial lighting system in pharmacies should also be organized based on hygienic requirements. As a rule, it is recommended to use LED lamps in pharmacies. LED systems are economical compared to other types of lighting, have a long service life, low heat generation, and accurate color

rendering. The sales hall, consultation area, prescription departments and rooms for the preparation of transdermal drugs have different hygienic requirements for lighting. For example, the light level in the prescription department should be at least 500–700 lux, and in aseptic blocks it should not be less than 1000 lux. Incorrect lighting in pharmacy rooms can lead to air stagnation, increased viscosity, slowed air exchange, and the appearance of fungi and mold due to lack of light. In rooms where natural light does not enter, regular use of artificial ultraviolet disinfectants is required to maintain air purity. Lighting also directly affects the quality of medicinal products. Many drugs are sensitive to light and undergo chemical decomposition (photodegradation) when exposed to direct sunlight. This reduces the strength of the drug or generally leads to the appearance of dangerous side effects for the patient. Therefore, the rooms where the drug is stored should be located so that direct sunlight does not fall on them, and the glass shelves should be covered with special light-shielding materials. The level of illumination also creates psychological comfort for customers in pharmacies. A bright, clean and well-lit environment increases the reputation of the institution, inspires trust in people, and improves the quality of treatment. Visual signals at close range are easier to see, navigation becomes more convenient, and service is faster. One of the additional requirements for lighting hygiene is the timely cleaning of lighting devices in pharmacies, monitoring their dustiness, and checking the angle of illumination and light distribution. Because dust accumulated on the lamps can reduce the light intensity by 20–30%.

Thus, lighting in pharmacies is a decisive factor not only for visual comfort, but also for sanitary conditions, the quality of medicines, the psycho-physiological state of employees, the comfort of visitors, and the safety of pharmaceutical processes.

Conclusion: The organization of lighting in pharmacies in compliance with hygienic requirements is very important for the quality of medical services, the health of employees and patient safety. Natural lighting improves the microclimate in the room, strengthens aseptic conditions and creates a sense of comfort for visitors. Artificial lighting allows for accurate, safe and efficient performance of processes for working with medicinal products. Insufficient lighting can lead to pharmaceutical errors, eye strain, reduced labor productivity and violation of sanitary requirements. Therefore, each pharmacy must strictly adhere to hygienic standards when planning its lighting system. Lighting is not a simple technical requirement, but an important hygienic factor that ensures human health and safety.

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